



A researcher from San Diego Zoo in California tracks a koala on St Bees Island, Australia.

zoo research might focus on animal behaviours that are not seen in the wild because they are very hard to observe. But if the research concentrates on a highly threatened species, sample sizes in both the wild and captivity might be very small, making zoo work that much more relevant to 'real-world' circumstances, and more valuable. "As the wild gets more and more pressurized, I think that some of the things we're learning about small-population management in zoos will be more and more applied to the wild," says Dickie.

HUMANS AND OTHER ANIMALS

Myriad skill sets can open doors to work in zoos and aquariums. Basic research in areas such as animal behaviour or reproductive biology continues to be important, says Durrant, and training in genetics, wildlife disease and conservation education is also valued. It is not necessary to have worked with exotic animals or in zoos previously, she notes: basic-research training with model species in universities is sufficient. "Get the strongest solid foundation you can get and that you can apply to conservation."

However, some experience at a zoo or aquarium, even as a volunteer, can make the transition easier. While doing her PhD at Saint Louis University in Missouri, George began working in the education department at Saint Louis Zoo, leading overnight and summer-camp education programmes. That experience was key to her being hired at the Tennessee Aquarium. "They knew I already understood the culture and goals of zoos and aquariums and the informal science-education part of that," she says. "So even if it's volunteering or serving as a keeper, that first step into it makes it a lot easier to get a job later."

Scientists interested in zoo work would do well to supplement their training with other skills related to conservation. Classes in non-profit management and fund-raising

can help. And George advises that researchers get comfortable with outreach, including the art of educating donors about their research.

"We need people who are limber enough to move between field and zoo," says John Fraser, a conservation psychologist who is president of the New Knowledge Organization, a social-science think tank based in New York. "It's the ability to have a foot in both worlds, with the authority of the field biologist and the access of the zoo biologist." He suggests pairing a field-biology degree with a minor in community organizing, organizational psychology or advocacy.

Regardless of the academic path, the ability to work with people — not just animals — is crucial. "The outreach I do ranges from elementary-school students to politicians to journalists and everything in between," says George. "Each programme is different. You have to be comfortable being flexible." Rachel Lowry, director of wildlife conservation and science at Zoos Victoria in Melbourne, Australia, finds that her most profound experiences come from engaging with audiences and helping to influence people's behaviour. "Zoos are really powerful conservation organizations because they have an enormous reach, and because they are entrusted with these incredible animals within their care," says Lowry. "To have an orang-utan stand behind you while you give a talk, and you say, 'Who here pledges to purchase only certified sustainable palm oil?' and an orang-utan raises its hand — it's very moving. Everyone standing in front of that orang-utan who has come to connect with it emotionally suddenly raises their hand and says, 'Yeah, I don't want that species to go extinct because of the food that I choose.' It's a really powerful role." ■

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EMPLOYMENT

On the job

US graduate-degree holders aged 30–54 with a background in life or physical sciences had an unemployment rate of 2.1% and a median salary of US\$90,000 in 2010–11, according to an analysis of census data. *Hard Times 2013: College Majors, Unemployment and Earnings*, released on 29 May by Georgetown University Center on Education and the Workforce in Washington DC, found that life- or physical-science graduates in the same age range with only a bachelor's degree had 4.8% unemployment and a median salary of \$60,000. With research jobs scarce, many science-graduate-degree holders work in secondary education, or in non-research posts in industries such as pharmaceuticals or aerospace, notes co-author Anthony Carnevale, the centre's director.

MEDICINE

Oncology burnout

Although 83% of US oncologists report career satisfaction, about 45% experience emotional exhaustion or other symptoms of burnout, says a study presented on 2 June at the meeting of the American Society of Clinical Oncology in Chicago, Illinois. The 2012–13 survey of about 1,500 oncologists found a link between burnout and high patient volume. Academic oncologists spend more time with patients and less on research than in the past, says lead author Tait Shanafelt, a haematologist and oncologist at the Mayo Clinic in Rochester, Minnesota. He suggests that early-career academic oncologists need to preserve their research time.

AWARDS

Prizes for the young

US researchers under the age of 42 will be able to vie for one of three annual unrestricted awards of US\$250,000 in life sciences, chemistry, and physical sciences and engineering, the Blavatnik Family Foundation in New York and the New York Academy of Sciences (NYAS) announced on 3 June. "We want to highlight young researchers who are doing such extraordinary and innovative work that it will incentivize other young researchers," says NYAS president Ellis Rubinstein. Nominations from US research universities and institutions, national labs and academic medical centres will be accepted from October to December 2013. NYAS council members may nominate industry researchers.